Wilmington District

Wilmington Harbor General Reevaluation Report

October 21, 2008

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General Reevaluation Report (GRR)

Wilmington Harbor GRR Components

- Relocation of a ship turning basin in the NE Cape Fear River
- Fish passage at the Ca Locks and Dams

Relocated
Turning Basin
Hilton RR Bridge
New Hanover
County
28 MI
Cape Fear
Memorial Bridge
State
Port
VA.
N.C.
Raleigh
N
N.C.
S.C.
Wilmington
Cape Fear
River Site
Brunswick
County
MOTSU
(Sunny Point)
Carolina
Beach
6.2 Mile Passing
Lane 42’ x 600’
Atlantic Ocean
N
Fort Fisher
Mouth of
Cape Fear River
WILMINGTON HARBOR
GRR

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Relocated Turning Basin

- Tight squeeze during daylight going bow first
- At night, backing stern first even more difficult

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Relocated Turning Basin Alternatives

Preferred Basin: C3

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Turning Basin/Channel Options

- Authorized channel with two options:
  - Turning basins at Almont and Southern States or
  - Only the pilots preferred alternative (C3)
- Authorized channel to Chemserve (now Kinder Morgan) with channel above deferred. Two options:
  - Turning basin at Almont only or
  - Pilots preferred alternative (C3)
- 38-foot project to Chemserve, 34-foot project above Chemserve

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Relocated Turning Basin Alternatives

Preferred Basin: C3

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Mitigation Required

- **Authorized basins already covered under existing mitigation plan**
- **Pilots preferred basin requires additional mitigation**
  - **Impacts 19 acres of primary nursery area (PNA)**
    - **In harbor mitigation**
    - **Fish passage**
      - **Locks and Dams**
      - **Cost effective**

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Problem

- **Alternative Formulation Briefing (AFB) October 2007**
  - **Pilots preferred basin about $3 million < authorized basins**
  - **Mitigation – fish passage at Lock and Dam # 2**
  - **National Ecosystem Restoration (NER) component or Section 1135 fish passage project at # 3**
  - **Fish passage at Lock and Dam #1 required under the Endangered Species Act - potential blasting impacts on shortnose sturgeon**
  - **All groups desire improve fish passage at all three locks and dams**
- **Error in AFB presentation**
  - **Recently updated costs**
  - **Pilots preferred basin about $4 million more than authorized basins**

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Recommended Plan

- **EM-1110-2-1613 recommends:**
  - **Turning basin located at upper end of channel so vessels can proceed bow first both up and downstream**
  - **Non-issue before since pilot's basin was "cheaper"**
  - **Ship simulation and design vessel issue to resolve**
- **Likely National Economic Development (NED)/NER plan**
  - **Channel excavated to Chemserve – channel and basin upstream of Chemserve deferred**
  - **Pilot's preferred basin constructed**
  - **$5 million < the authorized channel and basins**
  - **Rock ramp at L & D #2 mitigation for turning basin**
  - **Rock ramp at L & D #3 NER or Section 1135 component**

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Recommended Plan
Channel Above Chemserve Deferred
Pilots Preferred Turning Basin (C3)

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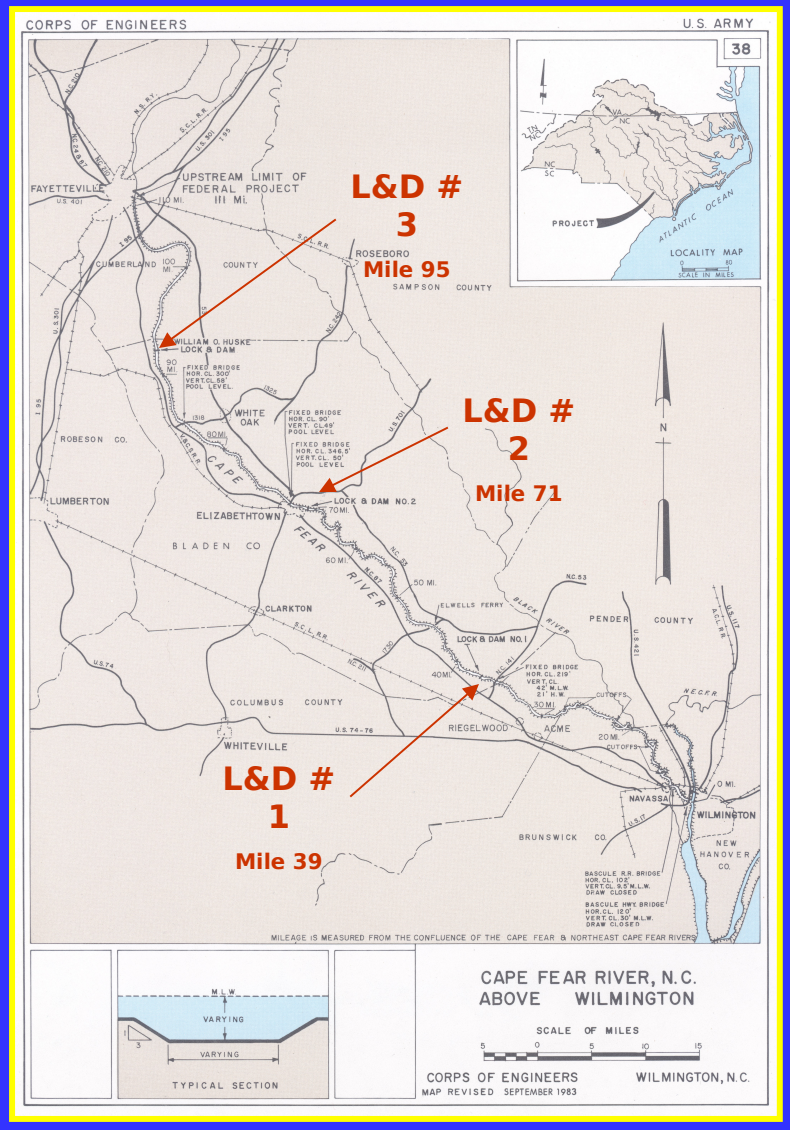
Cape Fear River Locks and Dams



Relocated Turning Bas

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Mitigation Options, Fish Passage
Cape Fear River Locks and Dams

Lock and Dam # 2

Lock and Dam # 3

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Fish Passage

- Deauthorization required if navigation precluded
  - Rock rapids in lock chamber
  - Lower or remove the dam
    - Extensive impact to water supp
- Deauthorization not required
  - Diversion Channel
  - Rock ramp

- Regardless of fish passage design, deauthorization may be requested due to lack of Federal interest
  - No existing or anticipated navigation
  - NC Senate and House passed legislation to take over lock and dam operations if facilities rehabilitated and rock ramps installed

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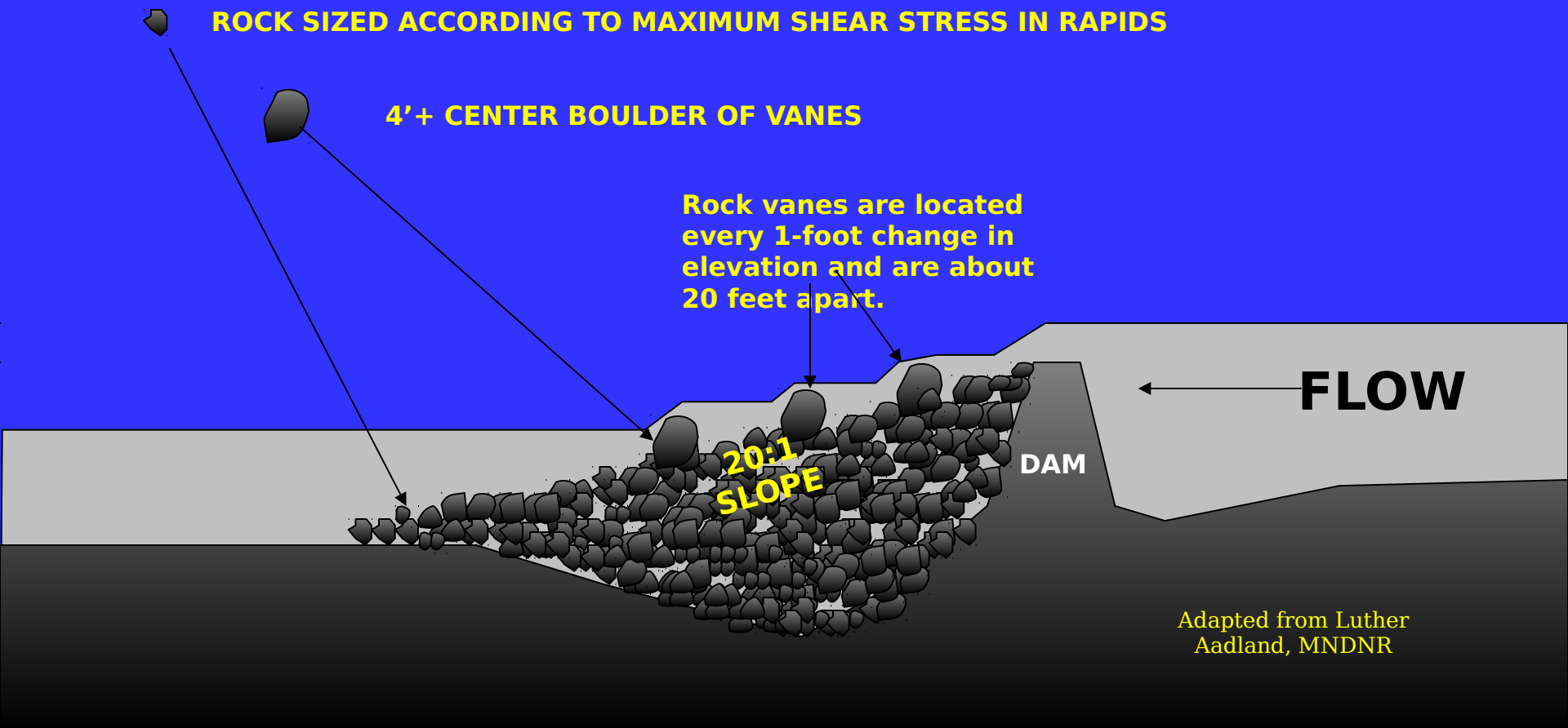
Rock Arch Rapids

LONGITUDINAL PROFILE


ROCK SIZED ACCORDING TO MAXIMUM SHEAR STRESS IN RAPIDS
4'+ CENTER BOULDER OF VANES
Rock vanes are located every 1-foot change in elevation and are about 20 feet apart.
FLOW
DAM
20:1 SLOPE

Adapted from Luther Aadland, MNDNR

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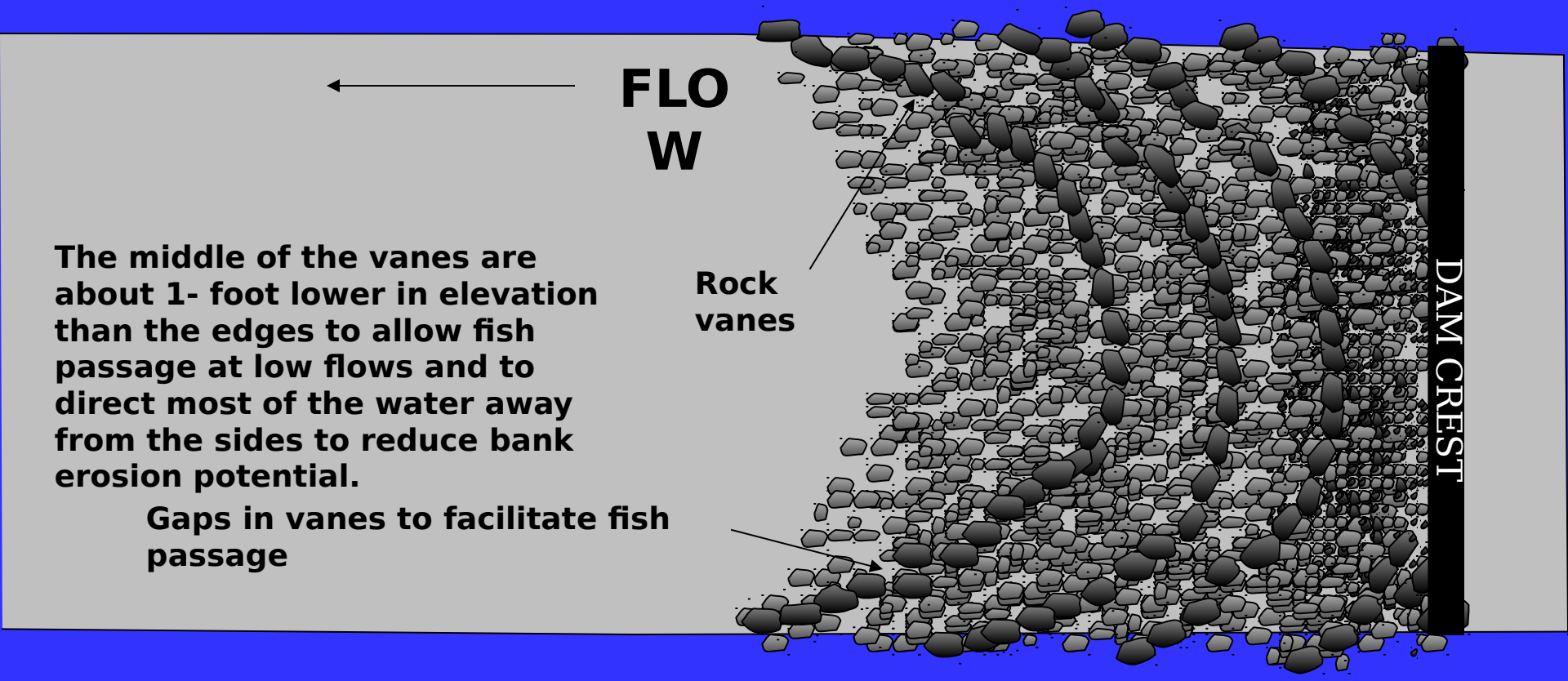
Rock Arch Rapids



The middle of the vanes are about 1- foot lower in elevation than the edges to allow fish passage at low flows and to direct most of the water away from the sides to reduce bank erosion potential.

Gaps in vanes to facilitate fish passage

Adapted from Luther Aadland, MNDNR

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Rock Arch Rapids
Red River, Fargo, ND

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Rock Arch Rapids
Red River, Fargo, ND

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Riverside Dam

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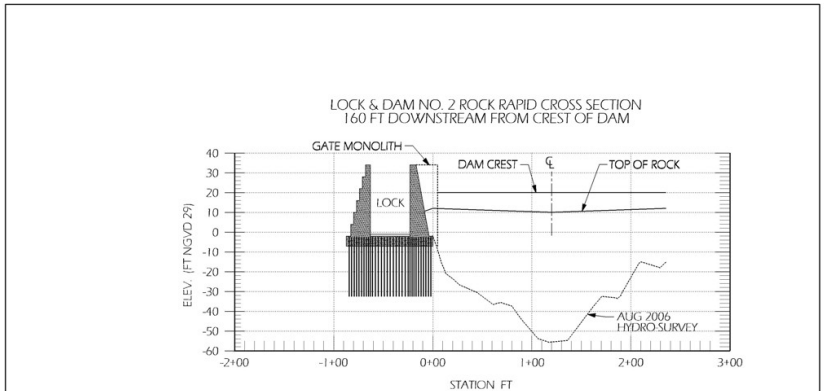
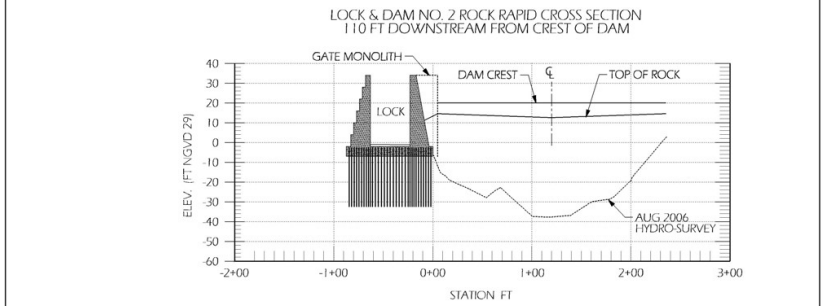
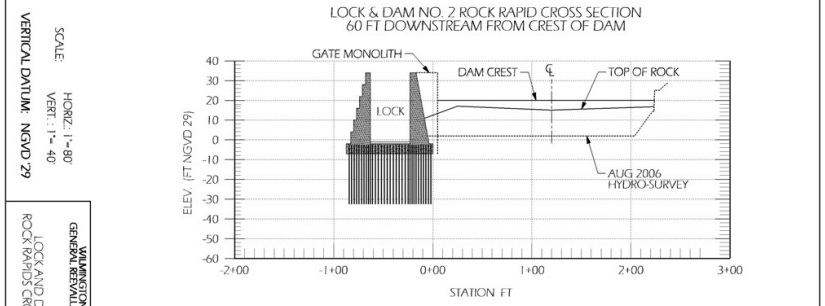
Rock Ramp Modification Lock and Dam # 2







SCALE: HORIZ.: 1"= 80'
VERT.: 1"= 40'
VERTICAL DATUM: NGVD 29

WILMINGTON HARBOR
GENERAL REEVALUATION REPORT
LOCK AND DAM NO. 2
ROCK RAPIDS CROSS SECTIONS

Figure 22A

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Tentative Schedule

(Ship Simulation Issues Not Resolved)

- **Draft EIS/Report** **Winter 2009**
- **Final EIS/Report** **Summer 2009**
- **Record of Decision** **Winter 2010**

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General Reevaluation Report (GRR)

http://www.saw.usace.army.mil/wilmington-harbor/GRR/GR